

Benjamini-Schramm convergence of high genus random translation surfaces

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Benjamini-Schramm convergence is a notion which captures the local geometry of a random point on a random space. It was originally introduced to study random rooted finite planar graphs (while sending the number of vertices to infinity), but it has since been generalized to a wide range of objects. A translation surface is a surface on which the local geometry is that of the Euclidean plane everywhere except for a discrete set of points called singularities. At each singularity, there is a multiple of 2π extra cone angle; that is, the local geometry is identical to the k -fold branched cover of the complex plane corresponding to the map $z \mapsto z^k$. The set of translation surfaces of genus g and area g admits a natural, Lebesgue-class, finite measure called Masur-Smillie-Veech (MSV) measure. In this talk, I will speak about joint work with Kasra Rafi and Hunter Vallejos where we prove Benjamini-Schramm convergence of MSV-distributed random translation surfaces as genus tends to infinity. We have also identified the limit, which is called a Poisson translation plane.

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